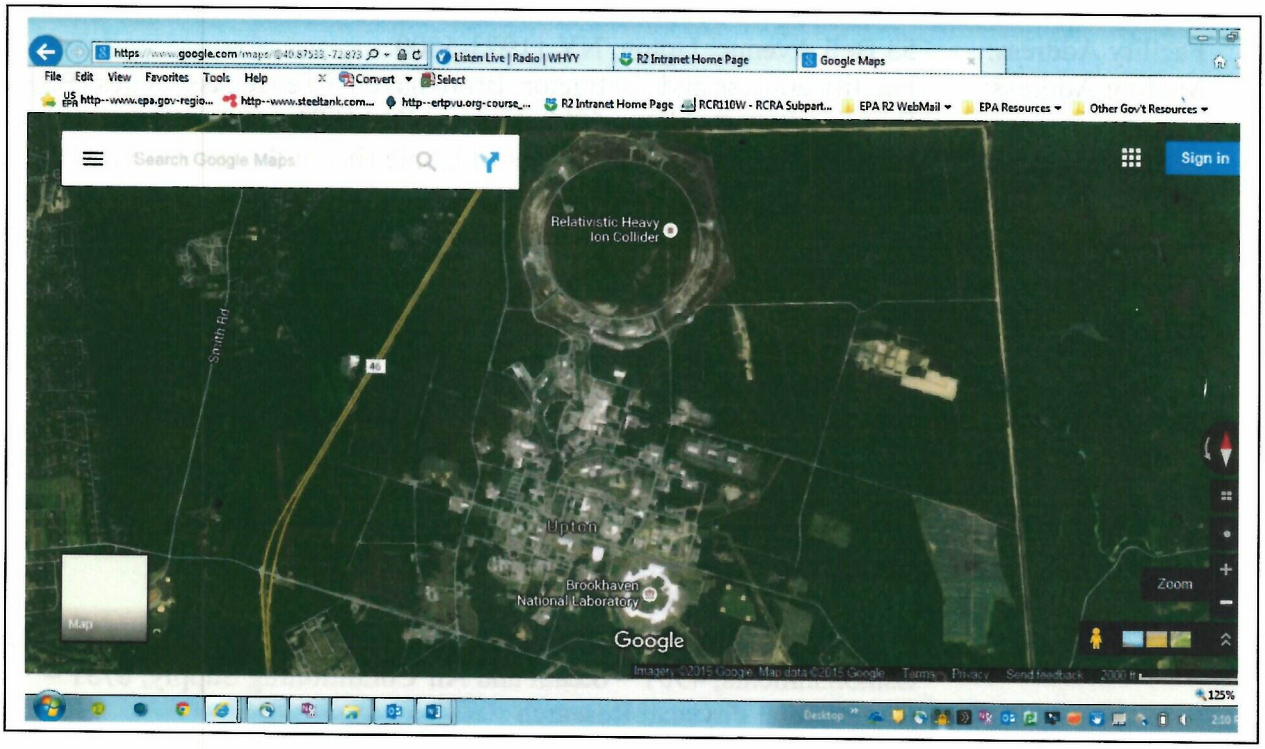
Compliance Evaluation Inspection Report
Brookhaven National Laboratory
Upton, NY
July 2016



Written by: Ronald Lockwood, RCRA-C & -I Enforcement Officer, 212-637-3413
Compliance & Program Support Branch (CAPSB)
Compliance Assistance Section (CAS)
Signature and Date: Ronald Lockwood 1/18/2017

Approved by: Kathleen Malone-Bogusky, CAS Section Chief, CAPSB, 212-637-4083
Signature and Date: K Mone-Bog 1/18/2017

COMPLIANCE EVALUATION INSPECTION REPORT

U.S. Environmental Protection Agency, Region 2
Division of Enforcement and Compliance Assistance
290 Broadway, 21st floor, New York, New York 10007-1866

Facility Name:	Brookhaven National Laboratory (BNL)
Facility Address:	53 Bell Avenue, Upton, NY 11973-5000
Mailing Address:	Facility address and contractor: Brookhaven Science Associates (BSA), Building 860, P.O. Box 5000, Upton, NY 11973-5000
Latitude; Longitude:	40.8645763, -72.873618 (center of iconic ring at the facility for National Synchrotron Light Source II)

Potential EJ Concerns: No (Attachment C)

Potential Flood-Prone Area: Yes (Attachment D)

Federal Facility:	Yes
FRS ID:	110000616726
RCRA ID:	NY7890008975
NY PBS:	1-1700
SIC Codes:	8733 – Noncommercial Research Organizations, 9999 – Non- Classifiable Establishments, 4961 – Steam and Air Conditioning Supply, 8731 – Commercial Physical Research
Date of Inspection:	July 27, 2016
Inspectors:	Charles Zafonte Ronald Lockwood (author)
Facility Representatives:	Jason Remien, Manager, Environmental Protection Division, BSA, 631-344-3477, remien@bnl.gov; Building 860. Michael F. Clancy, Jr., Operations Manager, Waste Management Division, BSA, -7651, clancy@bnl.gov Glen Todzia, Support Services Manager, BSA, -7488, todzia@bnl.gov Lèo Palumbo, Manager, Hazardous Waste Program, -5724, lpalumbo@bnl.gov Gerald Granzen, DOE, -4089, Gerald.granzen@science.doe.gov Joy Haskins, Environmental Compliance Representative Steven Ferrone (tank lead)

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1. INTRODUCTION

The Region 2 office of the Environmental Protection Agency (EPA) selected Brookhaven National Laboratory (BNL) for a RCRA-C (hazardous waste) inspection because of the statutory requirement to inspect federal treatment storage & disposal facilities (TSDF) annually.

The inspection was conducted unannounced on July 27, 2016. After Mr. Zafonte and I presented EPA credentials and business cards to the facility representatives (see above Facility Representatives, on page 2), we explained the reason for the inspection (as stated above), and offered in- and out-briefings and the opportunity to claim confidential business information (CBI).

This report presents observations and potential concerns from the inspection of BNL. Section 1 is this Introduction. Section 2 describes the relevant observations made during the inspection. Section 3 lists the preliminary potential concerns noted during the inspection. Section 4 provides suggestions of best management practices to reduce the facility's overall environmental footprint and promote sustainability. Section 5 enumerates the specific requests to BNL management for additional information made during the inspection or soon afterwards and information received by BNL management. Following these five sections are attachments referenced in the text.

2. RCRA HAZARDOUS WASTE OBSERVATIONS

The facility is a large quantity generator (LQG) of hazardous wastes and a permitted storage facility. The facility also operates underground storage tanks (USTs), most of which are subject to Part 280 regulation, however, we were unable to inspect the USTs due to time constraints.

Mr. Remien, Mr. Clancy, Mr. Todzia, Mr. Palumbo, and Ms. Haskins, escorted us to the 90-day storage areas located in various areas of the facility. The hazardous waste storage areas inspected were the following:

855 (Environmental Division),
815 (Global and Region Solutions),
725 (former Light Source),
735 (Center for Functional Nanomaterials),
490 and 463 (Biology),
555 (Chemistry),
919 (Collider Accelerator Department), Integrated Support Building,
480-535 and 510 (Physics) and
452 (F&O Building) and all hazardous waste storage trailers.

Labs that contained satellite accumulation areas (SAA) were also inspected (Bldg. 734, Lab # 1L10 and Room 154). Additional labs were looked at during the walkthrough, but no issues were observed. Mr. Todzia et al. escorted us to all the central hazardous waste storage areas (CHWSAs) that were storing wastes during the inspection.

During the walkthrough we observed that BNL maintains three types of 90-day storage areas which are described as follows:

Type 1 – freestanding metal storage cabinets located inside buildings
Type 2 – freestanding metal "HAZSTOR" buildings located outdoors
Type 3 – rooms within or connected to existing buildings located over basements or grade (a slight incline designed to prevent spills from exiting the building, like a berm.)

With the exception of the concerns discussed in the following paragraph, all hazardous wastes were stored in compatible, closed containers, dated < 90 days and labeled as hazardous waste and chemically identified. Universal wastes stored in Building 452 appeared to be of no concern.

Building 855

Two 55-gallon drums containing Class A unstable lead bricks (mixed wastes containing mercury [D009], tetrachloroethylene [D008], silver [D011], and lead [D008]) were labeled with conflicting accumulating start dates. Each drum had two labels, one dated 2015 and one dated 2016 (Attachment A - photo # RIMG0010 and #RIMG0012). On August 19th, 2016, BNL provided inventory copies from their Waste Management Facility Waste Tracking Database which addressed the issue of the drums as follows:

- Drum #R56625, which contains radioactive lead components, was received in Building 855 on 1/15/16
- Drum #R16-038 contains several smaller waste items, which were consolidated into this drum for cost effective disposal. In all, five packages of waste with serial numbers R57435, R56626, R58543, R58544, and R58545 were consolidated into this drum. The oldest item is R57135, which was received at Building 855 on 9/15/15
- On August 18, 2016 BNL provided documents that indicated both drums were shipped to Energy Solutions of Utah for treatment/disposal.

Building 815

In this trailer, designated as building 815, there was insufficient aisle space (Attachment A - photo #RIMG0030, #RIMG0032, #RIMG0033) to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless it can be demonstrated to the U.S. EPA Regional Administrator that aisle space is not needed for any of these purposes. On August 19th, 2016 BNL provided documentation indicating their correction of the issue.

Building 734

In Lab #IL10 in building 734, while inspecting the satellite accumulation areas (SAA), a bottle of acetic acid in a glass bottle was stored in direct contact with a metal shelf. Acetic acid, a

known oxidizer, can be capable of corroding the metal if in direct contact.

Building 734
In a lab located in Room 154, incompatible materials were stored adjacent to one another. A container of hydrochloric acid was being stored next to acetic acid and nitric acid. When chemical reactions are not properly managed, they can have harmful, or even catastrophic consequences, such as toxic fumes, fires, and explosions.

Manifest & Training
At the opening meeting we asked Mr. Remien if we could see both his manifest records for the last 5 years and the training records of all staff who worked with hazardous wastes. Mr. Remien asked one of his staff members to provide manifests and training records, and they were ready when we were halfway through the walkthrough (around lunchtime), Inspector Zafonte and I reviewed samples of the manifests, which all appeared adequate, however, the records were challenging to navigate since manifests were inter-mixed with other documents BNL used to track their wastes. The training records were not organized to show which employees completed RCRA training. On August 19, 2016 BNL provided a comprehensive training matrix for its staff that handle hazardous waste.

To confirm that the manifests provided are a complete representation of actual activity, I conducted a cross check with the NYSDEC manifest database shortly after the conclusion of this inspection and it appears that a complete representation of activity was presented at the time of the inspection.

3. PRELIMINARY LIST OF POTENTIAL CONCERNS

The following list presents the preliminary potential concerns for the facility.

REGULATORY OR PERMIT REFERENCE	FIELD OBSERVATION
RCRA - C	
6 NYCRR Part 372.2(a)(8)(ii): a generator may accumulate hazardous waste onsite of generation for a period of 90 days or less under the provisions of section 373-1.1(d)(1)(iii), (iv), (xix) and (xx) of this Title. The date upon which each period of accumulation begins must be clearly marked and visible for inspection on all containers, tanks or storage areas.	Two 55 gallon drums containing Class A unstable lead bricks (Bldg. 855) were labeled with conflicting accumulating start dates. Each drum had two labels, one dated 2015 and one dated 2016 (Attachment -A photo # RIMG0010 and #RIMG0012). Both dates were over the 90-day storage limit.

REGULATORY OR PERMIT REFERENCE	FIELD OBSERVATION
NYSDEC – 6NCRR Parts 372.2(a)8(ii), 373-1.1(d)(1)(iii)('c')('5") and Part 373-3.3(f): Must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency unless aisle space is not needed for any of these purposes.	In Bldg. 815 there was insufficient aisle space (Attachment A - photo #RIMG0030, #RIMG0032, #RIMG0033).
NYCRR Parts 372.2(a)8(ii), 373-1.1(d)(1)(iii)('c')('5') and 373-3.2(g)(4)-(5): LQG must maintain the following training records on-site: (1) the job title and written description for each position at the facility related to hazardous waste management and the name of the employee filling each job; (2) a written description of the type and amount of both introductory and continuing training that will be given to each person filling these positions; and (3) records documenting that the required training has been completed by facility personnel. Such records on current personnel must be kept until closure of the facility. Records for former employees must be kept for three years after departure. Personnel training records may accompany personnel transferred within the same company.	The facility could not provide the job title and written description for each position at the facility related to hazardous waste management, the name the employee filling each job, and a written description of the amount of introductory and continuing training that was to be given to each person related to hazardous waste management.

4. SUGGESTED BEST MANAGEMENT PRACTICES

Based on the following observations made during the inspection, the facility should consider developing, implementing and monitoring a chemical hygiene plan to go "beyond compliance" so as to reduce their environmental impact on the surrounding community as well as their overall environmental footprint:

- In Bldg. 734, Lab # 1L10 – Acetic acid in a glass bottle was stored on a metal shelf.
- In Bldg. 734 Room 154 – hydrochloric acid was being stored next to acetic acid and nitric acid.

5. REQUESTED DOCUMENTS

Below are the documents and other relevant information that was requested by EPA but have not yet been received at the time this report was written. Such information is necessary to complete this compliance evaluation. Once received, the information will be reviewed and the results of that analysis will be added to the inspection file.

- In Building 855, there were two 55-gallon drums containing Class A unstable lead bricks (mixed wastes containing mercury [D009], tetrachloroethylene [D008], silver [D011], and lead [D008]). Although BNL provided disposal documentation, we do not know what BNL's requirements are under the Nuclear Regulatory Commission. Please provide information explaining the half-life (rate of decay) of the drums, and if applicable, documentation to explain why the March 24, 2016 shipping date was postponed. If the shipping date was proponed due to high levels of radiation and by storing the drums longer, a safe radiation level was established, then please explain and provide documentation.

ATTACHMENT A: PHOTOGRAPHS

Attached

ATTACHMENT B: MULTI-MEDIA SCREENING OBSERVATIONS

To make the most effective use of EPA Region 2 enforcement resources, inspectors have been asked to screen for potential concerns in programs that, although applicable to the facility under evaluation, are not part of the scope of their inspection. Hence, below are my observations associated with BNL management of Clean Air Act (CAA), Clean Water Act (CWA) stormwater and Spill Prevention Control & Countermeasure (SPCC) requirements.

B-1 CAA OBSERVATIONS

Seven refrigerators and 14 air conditioning units (Attachment A - photo #RIMG014, #RIMG015) were removed from a residential area located in the South Complex apartment units. None of the air conditioning units were drained at the source location, and were sent to Bldg. 452 to undergo removal of any refrigerants still in the units (Attachment A - photo # RIMG013) according to Mr. Ed Richards who operates and manages the building. Mr. Richards stated the units were dropped off by Mr. John Borquin Jr and Mr. Joe Nubile, two technicians who work for Mr. Tom Roza, the Facility Complex Manager.

B-2 CWA STORMWATER OBSERVATIONS

In building 452 there was an uncovered metal bin, approximately 3 square yards, containing various pieces of scrap metals (Attachment A - photo #RIMG016, #RIMG017, #RIMG018). On August 19, 2016 BNL provided photographs which showed new storage containers for the drained compressors. The new containers are designed with a protective lid to prevent any releases to the surrounding environment.

B-3 CWA SPCC OBSERVATIONS

In the parking lot of Building 452, there was a mobile oil storage tank with an approximate 300-gallon capacity (Attachment A - photo #RIMG019, #RIMG020) which appeared to contain at least 3/8 of product (Attachment A - photo #RIMG0023) that had no secondary containment to contain any potential spills/releases. On August 19, 2016 BNL provided documentation illustrating the mobile oil storage tank is now kept in a designated sheltered area (Bldg. 639 Fuel Transfer Containment Area) which is a storage shed described as incorporating secondary containment.

ATTACHMENT C: EJ SCREEN

EPA United States Environmental Protection Agency

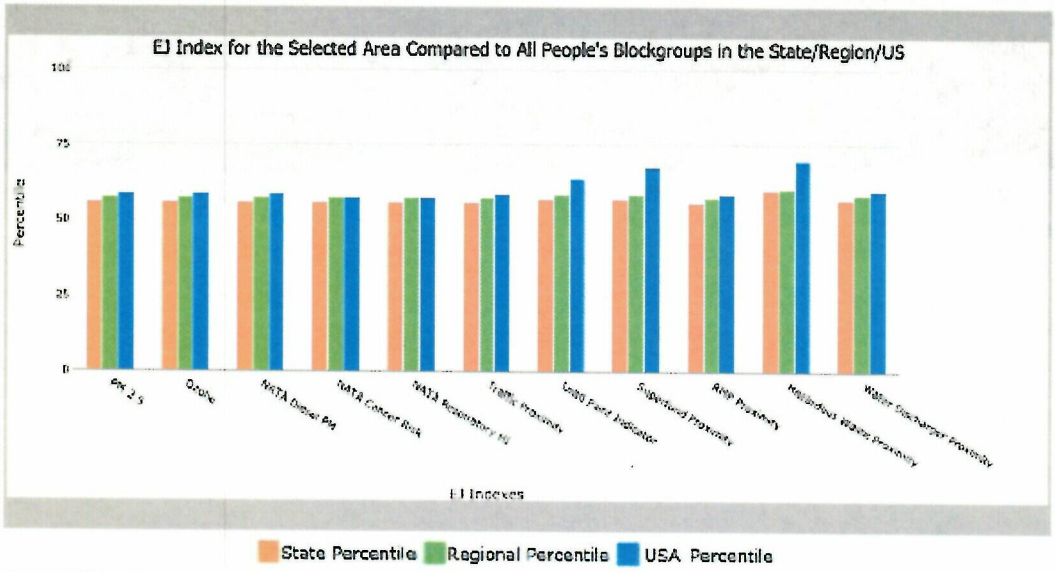
EJSCREEN Report (Version 2016)

1 mile Ring Centered at 40.864576,-72.873618, NEW YORK, EPA Region 2

Approximate Population: 20

Input Area (sq. miles): 3.14

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	56	58	59
EJ Index for Ozone	56	58	59
EJ Index for NATA* Diesel PM	56	58	59
EJ Index for NATA* Air Toxics Cancer Risk	56	58	58
EJ Index for NATA* Respiratory Hazard Index	56	58	58
EJ Index for Traffic Proximity and Volume	56	58	59
EJ Index for Lead Paint Indicator	57	59	64
EJ Index for Superfund Proximity	57	59	68
EJ Index for RMP Proximity	56	58	59
EJ Index for Hazardous Waste Proximity	60	61	70
EJ Index for Water Discharger Proximity	57	59	60



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

September 20, 2

1/3

ATTACHMENT D: FEMA 100 YEAR FLOOD ZONE

The Peconic River runs through BNL property and as indicated by FEMA 100-year flood layer (purple overlay).

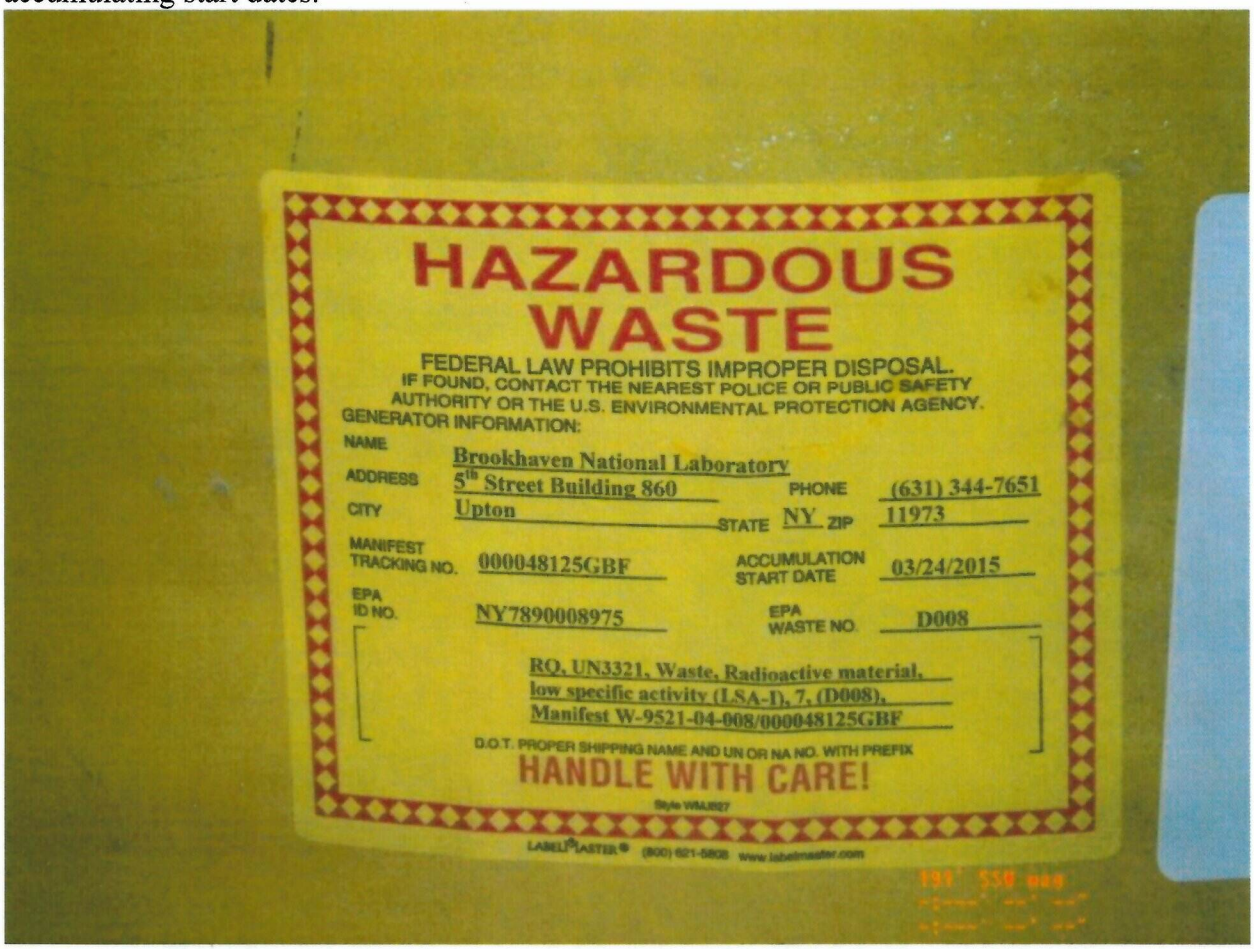
ATTACHMENT A: PHOTOGRAPHS

RIMG0010 - <u>Building 855</u>

Two 55 gallon drums containing Class A unstable lead bricks were labeled with conflicting accumulating start dates.

RIMG0012 - <u>Building 855</u>

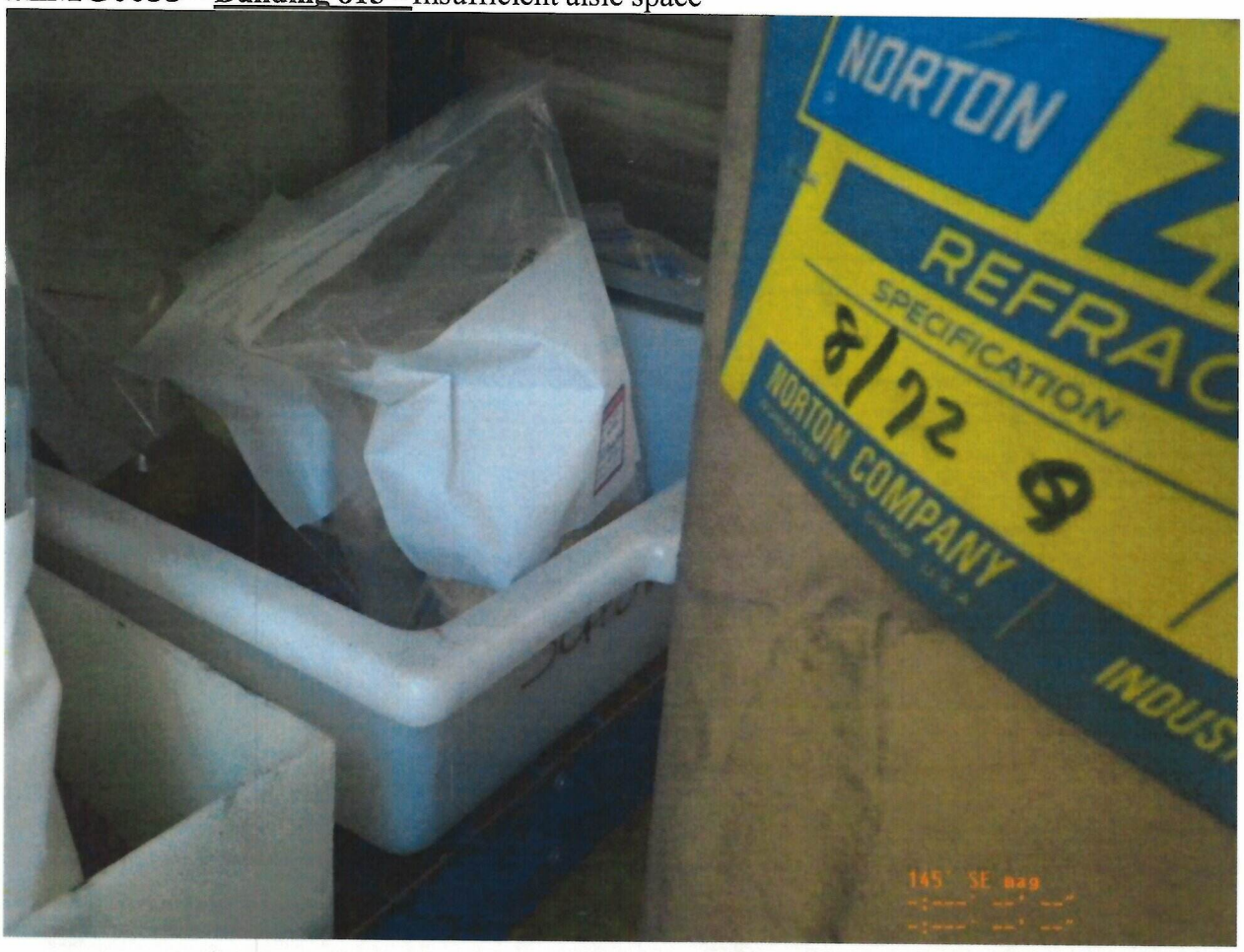
Two 55 gallon drums containing Class A unstable lead bricks were labeled with conflicting accumulating start dates.



RIMG0030 - <u>Building 815 -</u> Insufficient aisle space

RIMG0032 - <u>Building 815 -</u> Insufficient aisle space

RIMG0033 - <u>Building 815 -</u> Insufficient aisle space



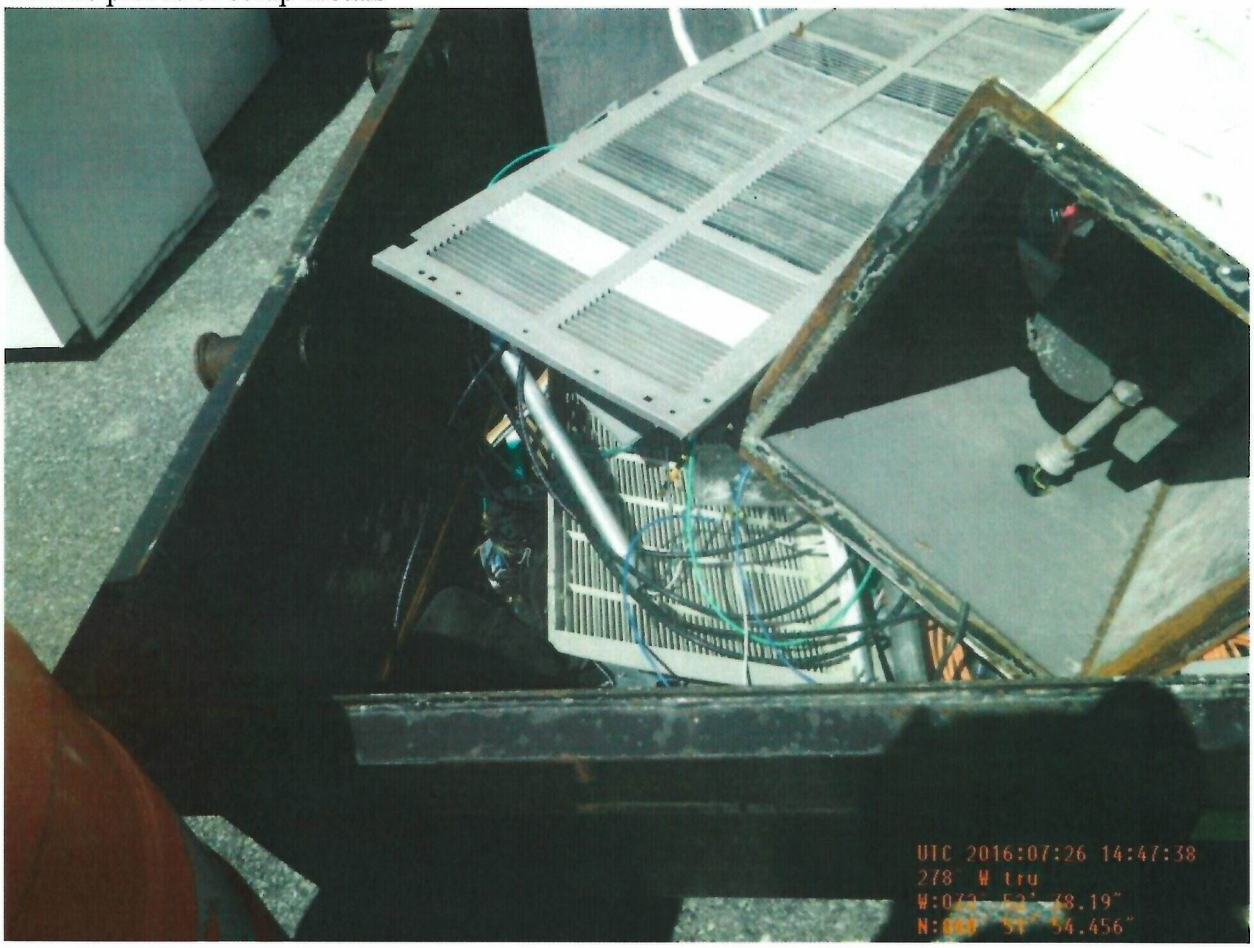
RIMG0014 - **Bldg. 452 -** air conditioning units removed from a residential area, located in the South Complex apartment units. Units were sent to Bldg. 452 to undergo removal of any refrigerants.

RIMG015 - **Bldg. 452** - air conditioning units removed from a residential area, located in the South Complex apartment units. Units were sent to Bldg. 452 to undergo removal of any refrigerants.

RIMG0013 - **Bldg. 452** removal of any refrigerants still in the units

RIMG0016 – **Bldg. 452** - uncovered metal bin, approximately 3 square yards, containing various pieces of scrap metals

RIMG0017 – **Bldg. 452** - uncovered metal bin, approximately 3 square yards, containing various pieces of scrap metals



RIMG0018 – **Bldg. 452** - uncovered metal bin, approximately 3 square yards, containing various pieces of scrap metals

RIMG0019 – **Bldg. 452 -** mobile oil storage tank with an approximate 300 gallon capacity which appeared to contain at least 3/8 of product with no secondary containment to contain any potential spills/releases.

RIMG0020 – **Bldg. 452 -** mobile oil storage tank with an approximate 300 gallon capacity which appeared to contain at least 3/8 of product with no secondary containment to contain any potential spills/releases.

RIMG0023 – **Bldg. 452 –** liquid level gauge of mobile oil storage tank with an approximate 300 gallon capacity which appeared to contain at least 3/8 of product with no secondary containment to contain any potential spills/releases.